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REPORT NO.

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GENERAL

1. The film factory at Shostka, Zavod No 3, was erected by French engineers in about 1936. During World War II, the equipment from this plant was removed by the Soviets to prevent its being destroyed or falling into the hands of the approaching German army. After the Germans advanced beyond Shostka, a German technician from Agfa, Wolfen, visited the site of the plant to determine if film production could be continued there. He found that all of the equipment had been removed by the Soviets. [REDACTED]

[REDACTED] most of the dismantled equipment had been returned and the film plant was in operation with this old equipment. [REDACTED] Germans were assigned to Zavod No 3 to direct the installation of dismantled Agfa equipment and to put the plant into operation on an expanded scale. [REDACTED]
 [REDACTED] German specialists from Agfa, Wolfen, [REDACTED] sent to Zavod No 3 were:

Foreman Gustav Donath, mechanic

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Foreman Otto Erhardt, electrical installations
 Foreman Koch, work shop installation and operation
 Foreman Ernst Krauter, work shop installation and operation
 Foreman Prasser, measuring technique
 Master Workman Karl Schmidt, power and cooling installations
 Foreman Schneider, synthetic material fabrication
Seifert, cooling installations
 Dipl Ing Zickendraht, electrical engineering

There were also four chemists from Zeiss-Ikon, Dresden, in our group:

Miss Bettische, a chemical technician and assistant to Dr Meyer

Dr Chem Luehr, emulsion techniques

Dr Chem Meyer, sensitizing and color film

Chem Ing Stenner, coating techniques

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AREA DESCRIPTION

3. The film factory, Zaved No 3, was located about 300 m north of the Shostka River and about 500 m north of the city of Shostka. It occupied an area about 500 x 300 m and was surrounded by a board fence with barbed wire on the top; the overall height of this fence was approximately 2.5 m. There were eight watch towers along the fence, which were guarded by Soviet soldiers armed with carbines. /See Enclosure (A) on which the following points are shown./

Point 1 Main factory building, one story high, stone construction, gray stucco finish, with a saw roof over the middle section and tar-board roofing elsewhere. The operations performed here included: film casting and treating; gelatin processing; emulsion and experimental emulsion production; coating and finishing; developing; laboratory testing; and cooling and storage. /See Enclosure (B), a floor plan of the main building./

Point 2 Absorption plant for the recovery of solvents.

Point 3 Solvent storage installation with 6-8 25-cubicmeter tanks each for acetone, alcohol, methanol, ether, etc.

Point 4 A new construction, half completed

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- Point 5 Raw products and chemicals were stored here.
- Point 6 Electrical switch and transformer station which converted current coming from the powder plant and going to the film plant.
- Point 7 Old installation for ether-alcohol recovery. (The new installation was located at Point 19.)
- Point 8 Old solvent storage area--only part of it was used. It was replaced by a new installation (Point 3).
- Points 9, 10, & 10 a Storage bunkers for nitrocellulose (pyroxylin). These three bunkers were situated in a forest. They were surrounded by earthen walls 4 m high and each bunker was protected by a lightning conductor 6 m high.
- Point 11 Building in which tools, sheet metal, etc were stored.
- Point 12 Forge and workshop building. This workshop was later transferred to a new building (Point 24), and this building (Point 12) was used as an assembly hall until dismantled late in 1949.
- Point 13 Building housing the metal and lathe shop. This shop was also transferred to Point 24 and dismantling of the old building was begun in November 1949.
- Point 14 Compressor station for compressed air and vacuum.
- Point 15 Plant entrance and guard station.
- Point 16 Main administration building, constructed of gray stucco on stone. This building was three stories high and had a gabled roof covered with corrugated eternite plates. It had been partially destroyed during World War II and reconstruction was completed in 1947.
- Point 17 Area which included apartment houses, fire fighting equipment, club house with movie and theater, and guesthouse. German technicians and other higher level employees lived in the apartments. All of these installations were the property of the film factory but located outside of the factory fence.
- Point 18 Construction of this building was begun in 1947 and completed in 1949. It was used for emergency diesel installation and contained one diesel engine of 750 HP.
- Point 19 A new building, completed in March 1948, which was to be used for distillation equipment for solvent and camphor recovery. However, the equipment had not yet been installed by November 1949.
- Point 20 Construction of this building was begun in August 1947 and completed about a year later. It housed the nitrogen production installation with oxygen compressors and an oxygen filling station.

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Point 21 A new structure housing the cooling system with compressors and evaporators to give cooling of 7 million kilogram calories. Construction was begun in early 1949 and the shell of the building was completed by the end of that year.

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Point 23 A new building for coating in which two 100-m long drying strips were located. These strips were connected by a corridor to the emulsion department in the front of the main factory building (Point 1). It was planned that this building also should contain tempering and melting kettles for emulsions, pumping installations, raw cellulose storage, office rooms, and winding equipment and storage space for coated film. Construction was started in the middle of 1948 and was half completed by the end of 1949.

Point 24 The new building which housed the metal and lathe shop (formerly located at Point 13) and the forge and work shop (formerly located at Point 12). It was constructed in 1947-48 and was ready for operation at the end of 1949.

Point 25 Carpenter shop for crates and models. Construction began in 1947-48 and was completed by the end of 1949.

Point 26 Construction of this building was only 20% completed by November 1949; film finishing was to be done here.

Point 27 Planned new building for film casting in which eight long film casting machines, each 30 m long with 1.25 m work width, were to be installed. Construction of this building was begun in 1949 and was to be completed in 1952.

Point 28 This building was 80% completed by the end of 1949 and operations were to begin by 1951. The wastes of film base and emulsions were to be utilized here.

Point 29 Annex to main factory building (Point 1). Experimental emulsion production was carried on here. Construction of the annex was completed by the end of 1947.

Point 30 Camp for penal workers which was located about 100 m west of the factory fence. A double wall, made of boards, 3 m high, with barbed wire at the top, surrounded the camp. Watchtowers were located along this wall. 150-200 male and female inmates of many nationalities were employed in constructing the buildings and helping to install the equipment in the film factory. [] no German prisoners here.

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Point 31 Powder factory. This factory was located in a dense wooded area, about 1200 m southeast of the film factory. [] it was enclosed by a fence which had watchtowers and was guarded night and day. [] all explosives were brought in from outside of Zavod No 3, as [] freight entering there and never saw or smelled the brown nitrogen oxide fumes characteristic of nitrating operations. There was a smokestack in the

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powder factory but [] this was for the power plant located there which supplied the factory with steam and electricity through over-head lines.

DISMANTLED AGFA EQUIPMENT SENT TO SHOSTKA, USSR

General Warehouse

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4. At Wolfen, the Agfa equipment listed below was dismantled and prepared for shipment to Shostka. Except in the three instances mentioned, it had reached its destination and was being stored in large barracks [] in 1947:

12 long film casting machines with 30 m copper bands of 1.2 m work width, and auxiliary equipment including solvent condensers, ventilators, etc. Only six of these machines were installed. The remaining six were to be installed in another new building (Point 27). Since the plans for this latter installation called for 8 long machines, two additional machines were ordered from Agfa, Wolfen, which arrived at Shostka on 31 Mar 52.

1 complete gelatin installation with kettles

2 preparation machines for treating film base

1 green-coat application machine for making color film

1 experimental coating installation of 0.6 m work width, complete with auxiliary equipment

2 complete long coating strips for 1.2 m work width and with auxiliary equipment (to be installed in a new building, Point 23); these were still in boxes in November 1949.

1 emergency diesel power installation with a 750 HP diesel motor and automatic controls for use in the film casting installations

1 nitrogen production installation, complete with all equipment

1 complete cooling system with a capacity of approximately 7 million kilogram calories; this system consisted of ammonia compressors, condensers, evaporators, etc.

2 developing machines for both black-and-white and color film

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1 electron microscope []

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2 turbines, each rated at 20,000 KVA []

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2 boilers, each to operate at 80 atmospheres pressure, with an output of 50 tons per hour of steam []

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various armatures and cooling vats with which to begin emulsion production

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a complete assortment of finishing equipment, including cutting machines, perforating machines, and sorting machines. []

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estimate there were 6 cutting machines and 100 perforating and sorting machines, together.

complete control laboratory equipment with all measuring instruments

5. The Agfa equipment listed below (by departments) was in operation in the main factory building (Point 1):

Film Casting Department

- 1 iron measuring container for ether; capacity - about 3 cu m
- 1 iron measuring container for alcohol; capacity - about 1.5 cu m
- 2 enameled iron filters for ether and alcohol
- 3 enameled cast iron horizontal dissolving kettles, each with a capacity of 5000 liters and equipped with stirring devices
- 3 filters ("knot catchers"), made of enameled cast iron or VA steel; capacity of each - approximately 100 liters
- 3 vertical triple pumps made of enameled cast iron and having porcelain pistons; capacity - 600-800 liters per hour at 40 atmospheres
- 2 12-atmospheres pressure filter presses of 5 sq m filter surface each. Attached to each press were 2 40-atmospheres pressure filter boxes each with 0.35 sq m filter surface
- 3 vertical mixing kettles made of enameled iron; capacity--8 cu m each
- 4 horizontal triple pumps made of enameled cast iron; capacity--250 liters each
- 3 double-jacketed pre-heaters made of enameled cast iron; 10 sq m heating surface each
- 2 12-atmospheres pressure filter presses, each with approximately 4 sq m filter surface. Attached to each press were 4 40-atmospheres pressure filter boxes of 0.35 sq m filter surface each
- 18 storage kettles; capacity--3 cu m each; kettles and connecting lines were made of enameled cast iron
- 6 casting machines with 30 m copper band of 1.2 m work width running at 60-120 m per hour and including 1 heating cabinet with ventilator and 1 solvent condenser for each casting machine
- 6 preparation machines and drying cabinets of 1.2 m work width attached to each of the casting machines
- 1 preparation machine and drying cabinet for 1.2 m work width, unattached
- 2 green coating and waxing machines, 1.2 m work width unattached

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Old equipment which did not come from Agfa, Wolfen, but which was also installed in the film casting department included:

- 3 iron horizontal dissolving kettles, capacity--3 cu m each
- 3 gear pumps, about 0.8 cu m per hour each
- 6 filter presses, 1.5 sq m filter surface each
- 3 tube pre-heaters for removing air bubbles
- 30 reserve storage tanks made of iron; capacity--1-1.5 cu m each
- 20 casting machines, 14 m band length and 0.6 m work width, with condensers and solvent recovery equipment attached
- 20 drying and preparation cabinets

Emulsion Department

- 1 tin-coated copper storage kettle, for cold distilled water; capacity--1 cu m
- 1 tin-coated copper storage kettle, for hot distilled water; capacity--1 cu m
- 3 mixing kettles, made of V8A steel (Cr Ni Mo); capacity--250 liters each and having 1 gelatin melting kettle and 2 silver nitrate dissolving and measuring vessels
- 1 ripening kettle, made of V8A steel, with automatic control and coil pre-heater; capacity--500 liters
- 3 cooling pans, 7 x 1 m, made of V8A steel; capacity--250 kg of liquid emulsion each
- 1 drum cutting machine for making emulsion noodles
- 3 watering apparatus for washing 250 kg of emulsion each
- 300 emulsion storage kettles, made of V8A steel; capacity--50 kg emulsion each

Coating Department

- 2 melting kettles made of V8A steel; capacity--250 liters each
- 2 heating systems with steam pre-heaters and automatic control
- 4 tempering kettles made of V8A steel; capacity--250 liters each
- 4 heating systems with electric pre-heaters and automatic control
- 2 flat filter boxes for emulsion
- 1 coating and drying track for 0.6 m work width with the following attached:
 - 1 spiral coating machine with two applicators, one for emulsion and one for protective coating

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- 1 vacuum drum for film transportation
- 1 transport for film on drying pegs
- 1 drying channel with ventilators, 40 m long and 2.5 m high through which the drying film passed
- 1 film detaching and rolling device
- 1 coating strip of 1.2 m work width, and a return device of 80 m drying length with attached melting and tempering installation; used for color film; speed 8 m per minute
- 3 coating machines, each 0.6 m work width, and a return device of 80 m drying length; used for coating black and white film at 10-12 m per minute

Finishing Department

- 2 cutting machines, 1.2 m work width, for cutting 1.2 m width bands into about 30 strips of 35 mm film
- 40 perforating machines
- 6-10 inspection machines (Aussuch Maschinen)

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(In addition to the above-mentioned Agfa equipment, there were about the same number of old-installation perforating and cutting machines in the finishing department.)

FILM PRODUCTION

Film Processes

6. The processes used in film production at Shostka were the very same ones which had been confiscated from the Agfa plant at Wolfen. However, a small amount of experimentation was being conducted at Zavod No 3 which may result in subsequent modifications of changes in the processes. At the time of my stay at Shostka, the film base was made in the film casting department. Nitrocellulose of 10-10.5% nitrogen content is dissolved in a mixture of ether and alcohol, 2:1 or 1:1. This solution then passes through a coarse filter or sieve known as a "knot catcher" to remove large nodules of undissolved cellulose. It is then pumped through a filter press to a mixing kettle and from there on through a pre-heater and a second filter to a storage tank where the air bubbles are allowed to escape. If the solution is not satisfactory at this point, it may be pumped back to either the dissolving kettle or the mixing kettle as seems desirable, and the process is then repeated from that point. If the solution is satisfactory, it is then cast in a continuous process on the near end of a horizontal copper band which moves forward and rotates like an endless chain around two drum pulleys. The band has two coats of cellulose acetate to make it smooth and an alkaline treatment on top to aid in stripping the film base from it. This band is enclosed in a heated cabinet filled with nitrogen gas to prevent the ether-alcohol vapors coming off from exploding as they would if oxygen were present. The partly dry film base is stripped from the far end of the moving copper band and passed through a pre-dryer to a preparing machine, where the surface is treated with an acetone-methanol

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solution which aids the adhesion of the emulsion which is later applied. The film base then goes to an after-dryer, from which the solvent vapors pass to an activated charcoal absorption room, where they are recovered. (At Wolfen the vapors were not recovered but passed to the air.) The film base then goes to a cutting machine which splits it down the middle and winds it into rolls of 300 m each, after which it goes to storage or to the film coating department. See Enclosure (C), a flow sheet for film base production.

7. Prior to World War II there had been about 35 small casting machines of 0.6 m work width and 14 m copper band length located in the main factory building at Zavod No 3; there were only 15 of these machines installed when I arrived there; 20 had not been brought back after the war. The Agfa, Wolfen, casting machines had a work width of 1.2 m and a band length of 30 meters and, therefore, a work capacity of four times that of the smaller Shostka machines. Six of the 12 large Agfa machines brought from Wolfen were installed in the main building to make up for those which had not been returned.
8. The emulsion for coating the film base was made in the emulsion department. Gelatin, potassium bromide, silver nitrate, distilled water, etc, are added to the starting kettle, which is heated at 60°-70° C while the contents are allowed to ripen. This mixture then goes to a solidifying pan, and the solid product is then conveyed to a cutting machine and pressed through a sieve to produce "noodles" about 5 mm in diameter. These are then washed to remove salts which are formed in the process and some of the potassium bromide. The excess water is then drawn off. Phenol is added at this stage to prevent the growth of mold, and the product then goes to the cooling room. From the cooling room it may be recycled through the after-ripening, solidifier, and cutting machine, or it may go directly to the film coating department. (There was a chrome-nickel steel cooling pan, which did not come from Wolfen, that was being installed in this department in 1949.) See Enclosure (D), a flow sheet for emulsion production.
9. In the film coating department, the emulsion (prepared as described above) is added to a melting kettle held at 35° C and distilled water, chrom-alum, phenol or thymol, saponin, and sensitizing chemicals are added. When all are dissolved, the solution is filtered into a vacuum kettle for removing air bubbles and for tempering. It then goes to the coating machine, where it is sprayed continuously on the moving film base. (The shortage of coating machines was a bottleneck to production in 1949 but the situation may have changed since that date.) The film base is hung in loops as it moves through the drying room to the finishing department.
10. In the finishing department, the film is cut with a cutting machine into 35 mm strips and the edges are perforated. The film is then inspected, wound, and stored.

Black-and-White Film Production

11. Thirty-five mm black-and-white and a small amount of color movie film were the principal types of film being produced at Shostka in November 1949. A large production of 16 mm black-and-white and color film was planned

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25X1 at Zavod No 3; [] there will be equal production
 25X1 of 35 mm and 16 mm film in the future. There was no production
 25X1 of plate film or film pack and only a little amateur roll film.

12. [] approximately 6 million sq m of finished black-
 25X1 and-white film were produced at Shostka in 1949. About 65%
 25X1 of this was 35 mm and the remainder was 16 mm film. []
 25X1 [] the production may reach 12 million sq m of film by 1953,
 25X1 with the installation of 8 additional long film casting
 25X1 machines, 2 additional long coating strips, and the completion
 of all the buildings that had been begun.

Color Film Production

13. Color film production was only in the experimental stage []
 25X1 [] in 1949; the process was not clean or exact
 25X1 enough to produce satisfactory negative color film. However,
 25X1 positive color film (similar to Kodachrom) of a very satis-
 25X1 factory quality was being produced in small amounts. []
 25X1 [] Zavod No 3 is the only plant in the USSR pro-
 25X1 ducing color film and it was rumored that it was to become
 the color film center of the USSR. If the entire plant were
 converted to color film production, an annual capacity pro-
 duction of 1.2 million sq m (35 million m of 35 mm film)
 could be expected.

14. The following are included in the making of color film: the
 application of the under coat, the middle coat, the yellow
 filter, and the outer coat to the top side, and a green layer
 which is applied to the underside of the film. As these
 coatings are only 5-6 Mu in thickness, the speed is only 7-8
 m per hour. This slow speed is necessary to prevent faulty
 application. The machine for applying the green coat was
 brought from Agfa, Wolfen, and had a work width of 1.2 m and
 a production speed of 60-100 m per hour. The green coat is
 also waxed in the same operation. There was one experimental
 machine for coating color film with a work width of 0.6 m,
 which had two coaters with a cooling and solidifying treatment
 between them. This operation is followed by drying, cutting,
 perforating, and spooling. There was also one Soviet coating
 machine with a work width of 1.2 m and a coating band 80 m
 long, with attached melting and tempering installations, which
 was used in color film production. Both of these machines
 could also be used for coating black and-white film. A
 machine for producing color emulsions experimentally was
 located in the annex to the main building. Most of the
 emulsion production was done in another auxiliary building,
 construction of which was not completed at the time of my
 departure. A developing machine for color film was located in
 the main building; this was actually two machines combined--one
 for developing positive and the other for developing negative
 film. This machine was rated at 300-350 m per hour of 35 mm
 film.

Planned Production of Safety Film

15. It was planned to make safety film from acetyl cellulose on
 four casting machines of 1.2 m work width and 80 m band length.
 Cellite, safety film made from acetyl cellulose, was not made
 at Shostka. "48 Cellite" is one grade of this product of
 which I have heard and means 48% acetyl content.

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Quality of Film Being Produced

16. About 80-85% of the black-and-white film and about 65-70% of the color film (positive) produced at Shostka passed plant inspection. ^{25X1} [redacted] about 5% of the black-and-white film was being returned to the factory as unsatisfactory after it had been distributed. Toward the end of 1949 this was reduced to 2%. The main defects of film were dirt and dust, faulty perforations, scratches, bubbles, and defective coating. ^{25X1} [redacted] the quality of black-and-white film production at Shostka was about 20% inferior to that which had been produced at Agfa, Wolfen. ^{25X1}

Research Laboratory

17. The Soviets were engaged in the study of color film emulsion science and technology in this laboratory, which was located at the top of the main building. ^{25X1} [redacted] The research laboratory was under the direction of Prof Sheppersdorf. There were about 10 people employed there--among these were the four German chemists from Zeiss and a number of Soviet assistants. ^{25X1} One complete experimental coating installation for 0.6 m work width (from Agfa) and a similar experimental coating installation for 0.2 work width from Zeiss-Ikon were located here. An experimental color emulsion production installation was also located in this laboratory but, as stated previously, the main emulsion production was carried on in another auxiliary building, construction of which was still not completed by November 1949.

Control Laboratory

18. The equipment for the control laboratory had been brought from Agfa, Wolfen. It consisted of general chemical laboratory equipment and also a spectograph with an analytical scale, an interferometer for measuring solvent vapors in nitrogen, light measuring instruments, instruments for making black curves for films, etc. A Siemens electron microscope, sent from Wolfen, was supposed to have been located at Zavod No 3, for studying crystal size, imperfections, etc, in controlling film production. ^{25X1} [redacted] ^{25X1}

NITROGEN AND OXYGEN PRODUCTION

19. The Shostka film plant produced about 70 cu m per hour of nitrogen and about 17 cu m per hour of oxygen. For this purpose the plant had one Linde ice machine, complete with compressors, separators, and auxiliary equipment which was brought from Agfa, Wolfen, and a similar machine of Soviet manufacture. The Soviet machine did not utilize the counter-current cooling principle and was thus taller. Nitrogen made from the Agfa equipment contained not over 0.1 - 0.2% oxygen, while that made from the Soviet machine contained about 3% oxygen. Due to the shortage of gas holders, rubber balloons (like captive balloons) were substituted for this purpose. There were eight of these balloons for nitrogen and 1 for oxygen storage at Shostka.

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20. The nitrogen is used in the film casting machines and attached drying cabinets to prevent explosion of the ether-alcohol solvent vapors which would occur if 5% of oxygen were present. The film contains about 16-20% solvent as it comes from the casting machine, but most of this is removed in the drying cabinet. The nitrogen containing the solvent vapors, 400-450 grams per cu m, circulates from the drying cabinet to a condensing column, where a temperature of -22° C is maintained by a circulating magnesium chloride solution. The condensed solvent, along with about 1% of recovered camphor, is returned to the nitrocellulose dissolving kettle, and the nitrogen, containing 230-250 grams solvent per cu m, goes to a carbon absorption tower before it is returned to the film casting machine. [] a carbon absorption capacity of about 60,000 cu m per hour would be required to absorb the residual solvent in the nitrogen coming from six casting machines.
21. The liquid oxygen is gasified, compressed into 15-liter steel cylinders at 150 atmospheres, and sold to the steel cutting and welding trade. []

COMPRESSORS

22. Zavod No 3 had the following compressors for cooling equipment, etc, in addition to those which had been brought from Wolfen:

ammonia compressors for 100,000 calorie cooling system
(an old French installation)

air compressors for making liquid air in nitrogen-oxygen
production (an old French installation)

compressors for filling oxygen into cylinders (of Soviet
manufacture)

compressors for transfer of liquids at 3-4 atmospheres
pressure (of Soviet manufacture)

All of the compressors were electrically driven. Apparently, there was no shortage of compressors at Zavod No 3.

RAW MATERIALS

23. Solvents, which [] came from somewhere in the USSR, were shipped into Zavod No 3 in tank cars. Ammonia for the cooling installation was obtained in tank car lots (1 per month); this may have come from Wolfen, as did the film sensitizers and chemicals for color film. [] all other raw materials came from the USSR. Steam and electricity were conducted through overhead lines originating in the nearby powder factory. Plant water was obtained from a well.

LABOR

24. There were about 700 people employed at Zavod No 3, in addition to the German specialists. About two-thirds of the 700 were women. There were also 150-200 laborers from the penal camp (Point 29) doing construction and installation work. The installing technicians were on contract and came from Shostka and Kiev. Employees engaged in film casting and pure production operated on three 8-hour shifts daily and all other workers operated on an average of one 8-hour shift per day.

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PLANNED INSTALLATIONS AT ZAVOD NO 3

25. The installations listed below were either planned or in the stage of early construction at the time of my departure from Shostka:

Film Casting Plant (Point 27)
(Agfa Equipment)

- 8 film casting machines, 1.2 m work width, 30 m band length; six of these had been dismantled from Wolfen and two were requisitioned later. Of these eight film casting machines, four were for 35 mm nitrocellulose film and four were for 16 mm cellulose-acetate film
- 4 solvent kettles, 5-8 cu m each, including pumps, "knot catchers", filter presses, pre-heaters and storage vessels

Emulsion Plant (Point 28)
(Agfa Equipment)

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[redacted] Zavod No 3 in November 1949, construction of the emulsion plant had been completed and 90% of the following equipment had been installed:

- 4 mixing vessels; capacity--about 500 liters each
- 8 cooling pans, each 7 x 1 m; capacity--250 kg emulsion
- 3 cutting machines for emulsion noodles
- 8 washing apparatus, each holding 250 kg emulsion noodles
- 3 after-ripening kettles; capacity--500 liters each
- 6 cooling pans, 7 x 1 m; capacity--250 kg emulsion each
- 2 drum cutting machines for emulsion noodles
- 1000-1500 storage containers for emulsion; capacity--500 liters each
- adequate cool rooms for emulsion storage

Coating Plant (Point 23)
(Agfa Equipment)

By November 1949, construction of the coating plant was half completed. Equipment for two coating installations of 1.2 m work width was available as follows:

- 6 melting Kettles; capacity--500 liters each; made of V8A steel
- 6 emulsion filters made of V4A steel
- 12 tempering and de-aerating kettles; capacity--500 liters each
- 12 forced circulation water heating installations with automatic temperature control

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- 2 spiral coating machines, each with two points of application, 3 stages high
- 2 vacuum transport drums
- 2 film transport and cross-current drying installations, each with 24 ventilators and a capacity for 24,000 cu m per hour of air; also air distributors, pipes, etc, for film loops 9.5 m high and passing through drying track 115 m long
- 2 storage places for uncoated celluloid film
- 2 storage places for coated celluloid film, each with 10 storage chambers for storing color, X-ray, positive, negative, etc, film in separate spaces

Finishing Plant

This installation was to be located in a new building (Point 26); plans called for finishing approximately 60 million running meters of 35 mm film and 90 million running meters of 16 mm film (acetate film).

Color Film Laboratory

A control laboratory for color film production is planned. This laboratory is to be located in a new building.

Cooling Installation (Point 21) (Agfa Equipment)

Construction of the building had been completed and Agfa equipment was being installed by November 1949. This equipment included: 1 cooling installation rated at 6-7 million kg cal with ammonia compressors, condensers, evaporators, pumps, etc.

Solvent Storage (Point 3)

Building and installation were almost completed [redacted] in 1949. The equipment included: one solvent storage installation for ether, alcohol, acetone and other solvents.

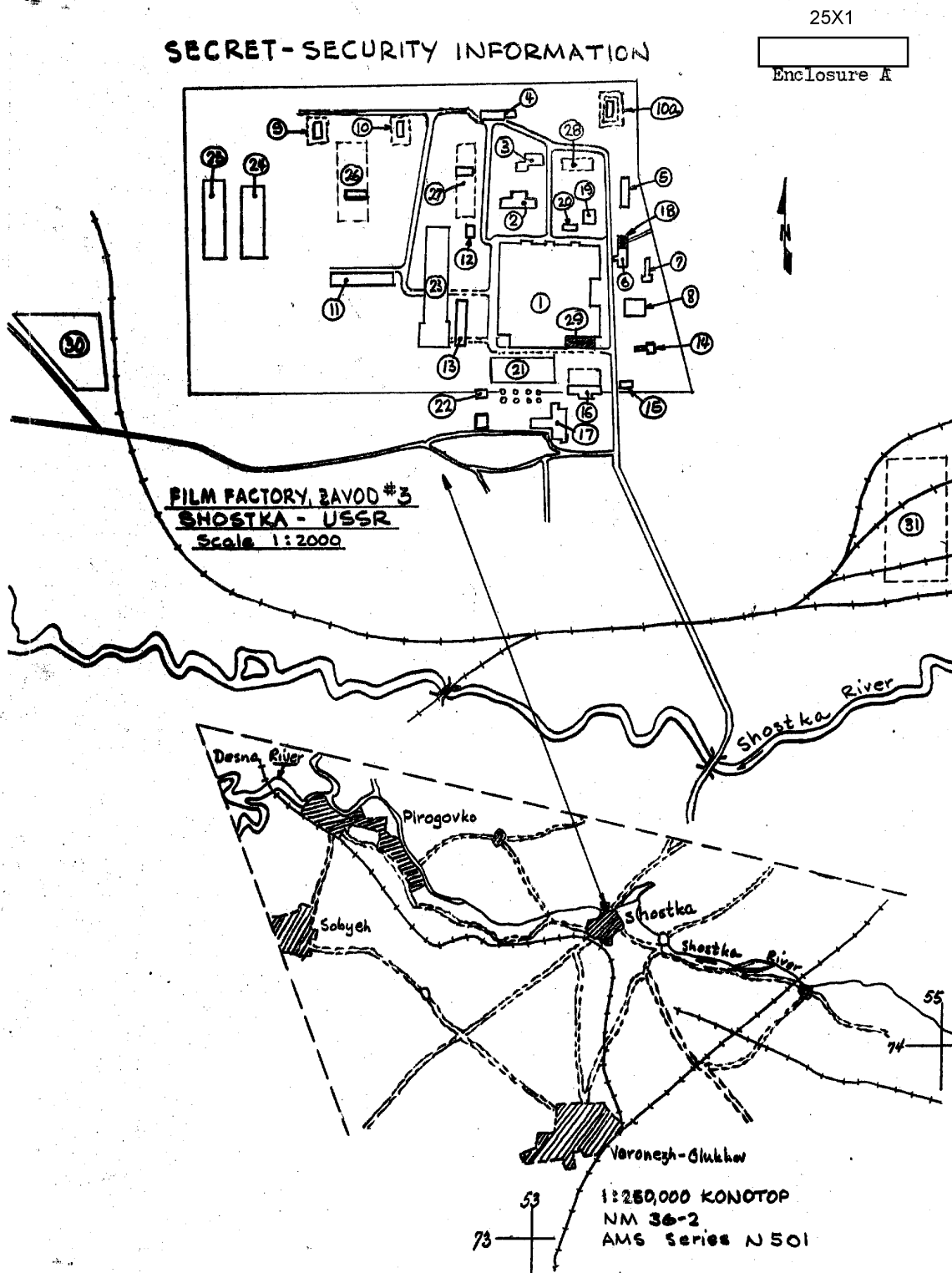
SECURITY MEASURES

- 25X1 26. In order to gain access to the area at Zavod No 3, [redacted] present a factory pass and call out the identification pass number as we entered. On leaving the factory area, the pass had to be returned to the control office. All employees except plant management personnel were searched before entering the plant area; tobacco, cigarette lighters, and matches had to be left at the control office. [redacted] German technicians were not restricted [redacted] were under continual surveillance and occasionally questioned, so [redacted] curtailed [redacted] movements and activities accordingly.

25X1

- 25X1 ENCLOSURE (A): Overlay of Shostka Area (USSR)
- ENCLOSURE (B): Floor Plan of the Main Film Plant, Zavod No 3, Shostka, USSR; Part 1--Floor Plan, Part 2-- Legend
- ENCLOSURE (C): Celluloid Film Base Production Flow Sheet
- ENCLOSURE (D): Flow Sheet for Emulsion Production

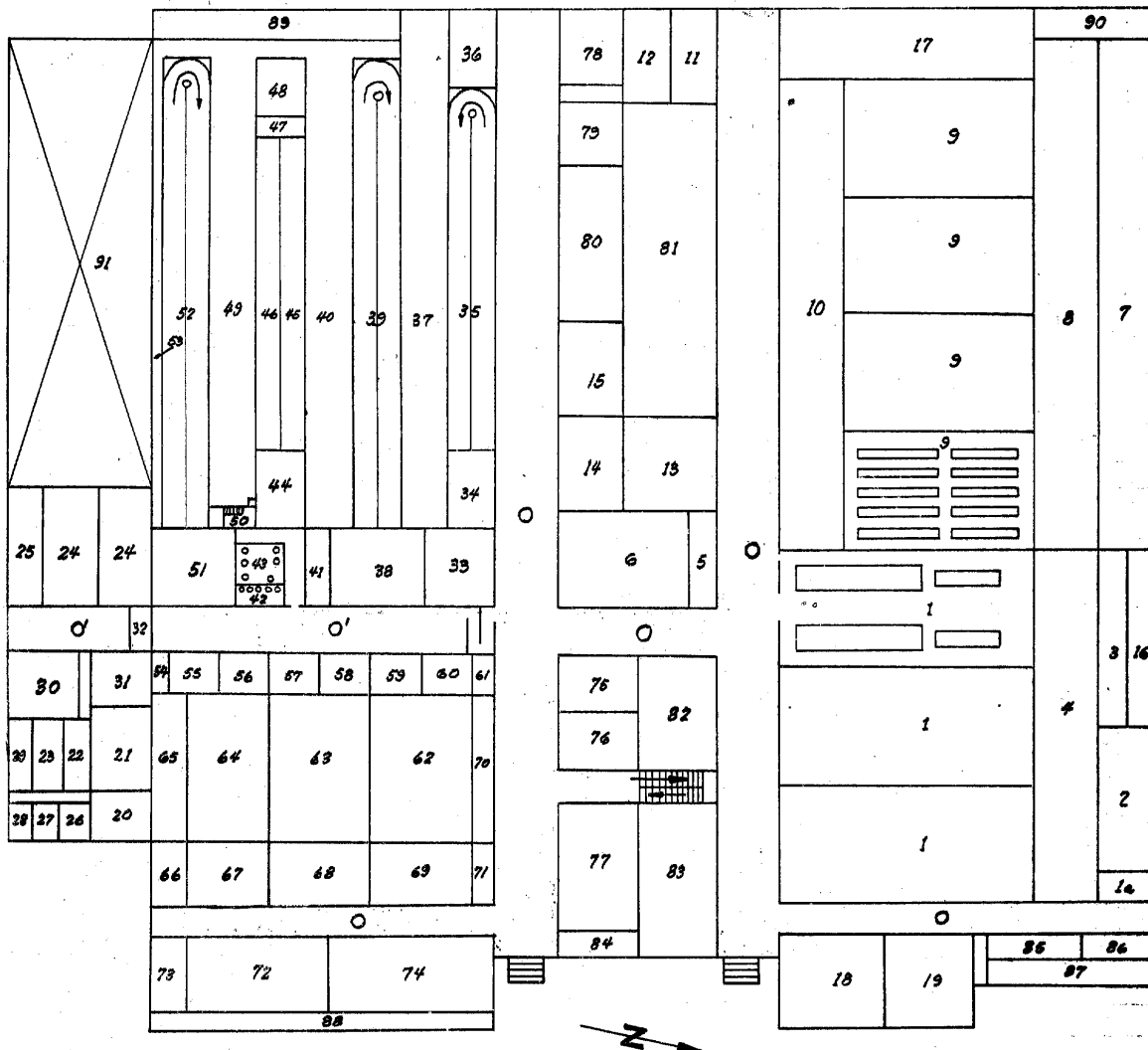
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SECRET - SECURITY INFORMATION

Enclosure B



0 10 20 30 40 50
METERS

FLOOR PLAN of MAIN FILM PLANT
ZAVOD #3 - SHOSTKA - U.S.S.R.

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Enclosure B/1

LEGENDPoint

- 0 Lighted corridors
- 0¹ Dark corridors
- 1 Rooms containing each 2 casting machines and 2 (Agfa) preparation drying closets, 30 m length of band, 1400 mm width of band
- 1a Measuring containers for ether and alcohol with filters
- 2 Room for treatment of solvents having:
 - 3 solvent vats each holding 5 m³ (from Agfa)
 - 3 (Agfa) knot filters, used to remove nodules of undissolved nitro-cellulose
 - 3 vertical triple pumps each having a capacity of 600-800 liters per hour (from Agfa)
- 3 Room for first filtration equipped with the following (from Agfa):
 - 2 filter presses
 - 2 filter boxes
 - 3 vertical mixing vats
 - 4 horizontal triple pumps
- 4 Room for second filtration, deaerating, and storage vats, equipped with the following (from Agfa):
 - 3 preheaters
 - 2 filter presses
 - 4 filter boxes
 - 18 storage vats
- 5 Room with switch board and direct current transformers to operate the 6 casting machines and the drying and preparation installation (Agfa)
- 6 Room containing the following Agfa equipment:
 - 1 preparation and drying installation
 - 1 green coating machine
- 7 Solvent room in which the following old equipment was installed:
 - 3 horizontal solvent vats
 - 3 cogwheel pumps
- 8 Room in which the following old equipment was located:
 - 6 filter presses
 - 3 tube pre-heaters

30 storage vats

LEGEND for ENCLOSURE (B)

SECRET

Page 1 of 5

SECRET**Point**

Enclosure B/2

- 9 Each of these rooms were furnished with the following old equipment:
- 5 small casting machines, 14 m band length and 0.6 m work width
 - 5 preparation and drying installations, 14 m band length and 0.6 m work width
- 10 Storage room for celluloid film tracks and testing room with two lengthwise cutting machines and winding machines (from Agfa)
- 11 Storage room for celluloid bands with 2 lengthwise cutting machines
- 12 Storage room for celluloid bands
- 13 Room for making preparation solvents
- 14 Room for preparation of overcasting for copper bands (Agfa)
- 15 Room for preparation of undercasting for copper bands (Agfa)
- 16 Storage room for nitro-cellulose with elevator to the filling room
- 17 Storage room for apparatus--not in use
- 18 Washing and drying room for celluloid waste
- 19 Storage room for washed celluloid waste
- 20 Emulsion preparation room equipped with the following (from Agfa):
- 3 preparation vats with accessories each holding 250 liters
 - 1 maturing vat with a capacity of 500 liters
- 21 Emulsion coagulation room with 3 cooling pans (Agfa)
- 22 Emulsion cutting room equipped with the following (from Agfa):
- 1 drum cutting machine for needles
 - 2 storage vats for distilled water
- 23 Emulsion watering with 3 watering installations for 250 kg
- 24 Cooling rooms for emulsion
- 25 Ventillation and cool air installation for the cooling rooms and the emulsion plant
- 26 Preparation room for chemicals used in the preparation of emulsion
- 27 Wash room for used vessels and glasses
- 28 Laboratory of the emulsion plant
- 29 Storage of chemicals
- 30 Storage of gelatine

LEGEND for ENCLOSURE (B)**SECRET****Page 2 of 5**

SECRET

Enclosure B/3

Point

- 31 Wash room for emulsion storage vats
- 32 Light absorbing corridor between emulsion plant and coating plant
- 33 Room for the preparation of additives, such as saponin, sensitizers, etc, to be used in the melting vat of the coating plant
- 34 Melting vat, tempering vat, and filter for the continuous coating and drying track having an effective width of 1.2 m for color film; equipped with a coating machine and winding apparatus for the coated and dried color film
- 35 Continuous drying track for films 1.2 m wide
- 36 Room containing installation for the airing of the drying track for 1.2 m film
- 37 Lighted corridor between the two drying tracks equipped for ventilators and operating machines for the drying tracks
- 38 Room for the coating machine and the winding apparatus for a continuous drying track of 0.6 m film (black - white)
- 39 Continuous drying track for 0.6 m film
- 40 Corridor (as in area 37)
- 41 Connecting corridor
- 42 Storage room for (Agfa) accessories pertaining to the adjoining color film coating track
- 43 Room equipped with melting and tempering vats with filters for the color film coating track, equipped with the following (from Agfa):
 - 2 melting vats; capacity of each--250 liters
 - 4 tempering vats; capacity of each--250 liters
 - 2 filters
- 44 Room equipped with (Agfa) coating machine and track for color film
- 45 Connecting corridor (dark) in the color film coating track
- 46 Drying track (Agfa) for color film coating installation 0.6 m effective width
- 47 Winding installation for (Agfa) coating track
- 48 Two-story storage for coated color film tracks
- 49 Corridor (as in area 37)
- 50 Connecting staircase which led to the filter room
- 51 Room equipped with coating machine and winding installation for a continuous drying track for 0.6 m black - white film
- 52 Continuous drying track for coating installation

LEGEND for ENCLOSURE (B)

SECRET

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SECRET

Enclosure B/4

Point

- 53 Corridor (as in area 37)
- 54 Passageway from coating plant to finishing plant
- 55, 60 Storage rooms for coated broad film tracks
- 56, 57) Cutting machines (Agfa) which cut the broad film track
- 58, 59) lengthwise to moving picture width
- 61 Testing room for the coating plant
- 62, 63 Rooms equipped with (Agfa) perforating machines and selecting machines
- 64
- 65 Dark corridor
- 66 Automatic testing room for film
- 67, 68 Half-dark rooms for connecting of finished movie and amateur film
- 69
- 70 Storage room; designed for future installation of a color film development machine
- 71 Storage room for (Agfa) perforating machines--not in use
- 72 Storage and shipment of finished and packed movie film
- 73 Office of the workshop
- 74 Workshop for repair and maintenance of finishing machines
- 75 Positive and negative developing machine for color film
- 76 Developer tank for black - white film
- 77 Tank and machine for developing of black - white film
- 78 Air circulation and machine room for color film developing machine
- 79 Color film developing machine for positive and negative film
- 80 Photographic studio
- 81 Cooling installation
- 82 Experimental (Zeiss-Ikon) coating machine for 0.2 m film
- 83 Checking and issuing of work clothes
- 84 Office of the finishing department
- 85 Canteen
- 86 Workshop of the film plant
- 87 Office rooms
- 88, 89 Loading platforms
- 90
- 91 New large emulsion plant; this plant had 5 floors

LEGEND for ENCLOSURE (B)

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Enclosure B/5

Second Floor

Several laboratories were located on the second floor above rooms 75, 76, 77, 82, 83, and 84.

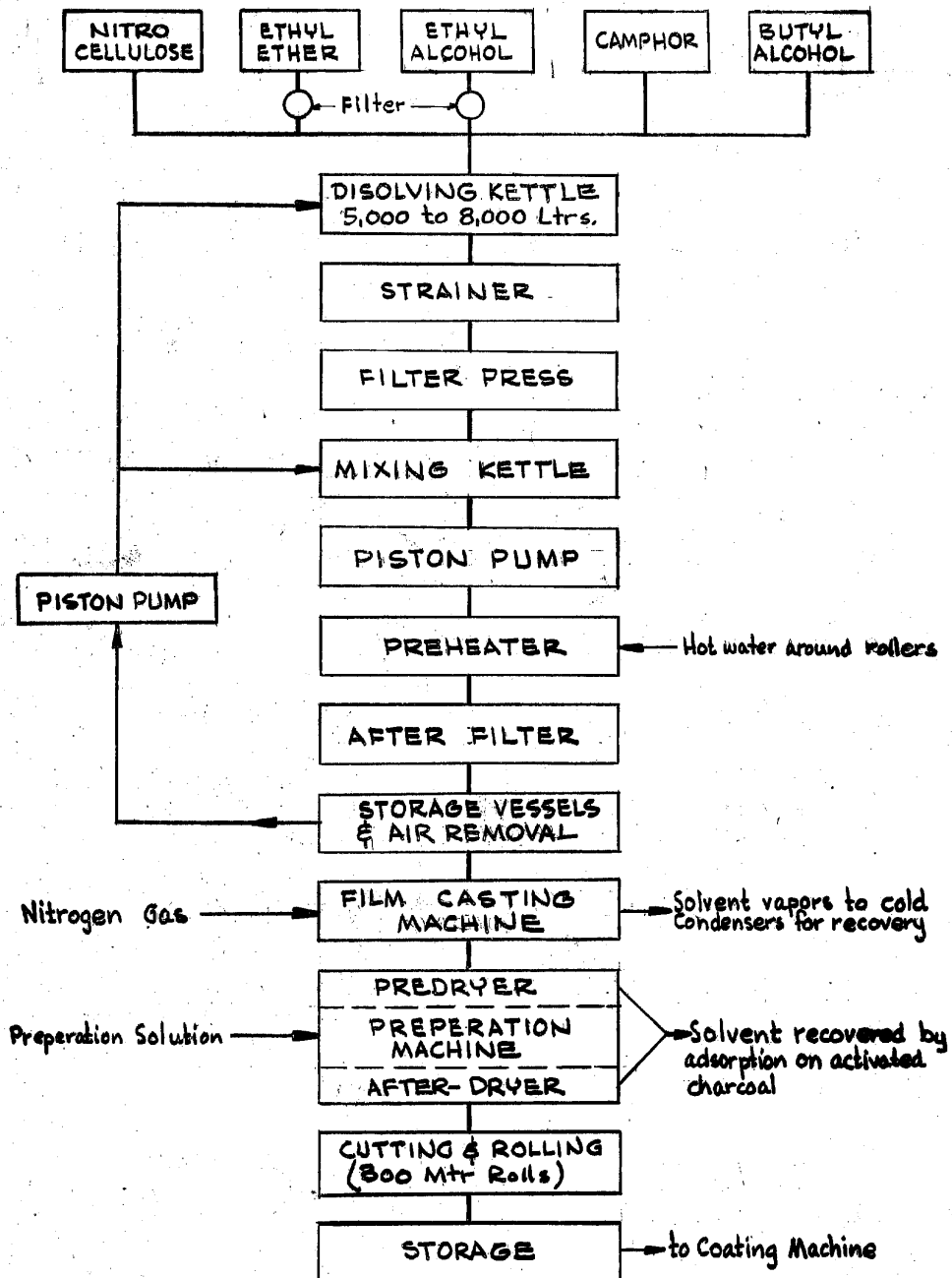
LEGEND for ENCLOSURE (B)

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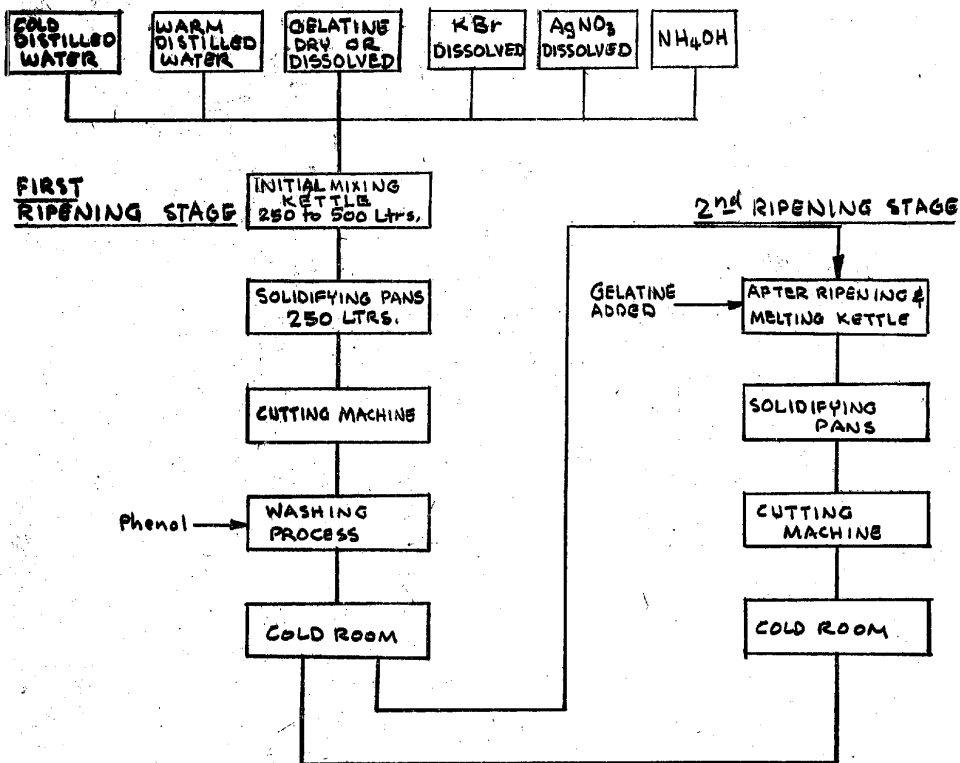
Enclosure C

CELLULOID FILM BASE PRODUCTION FLOW SHEET

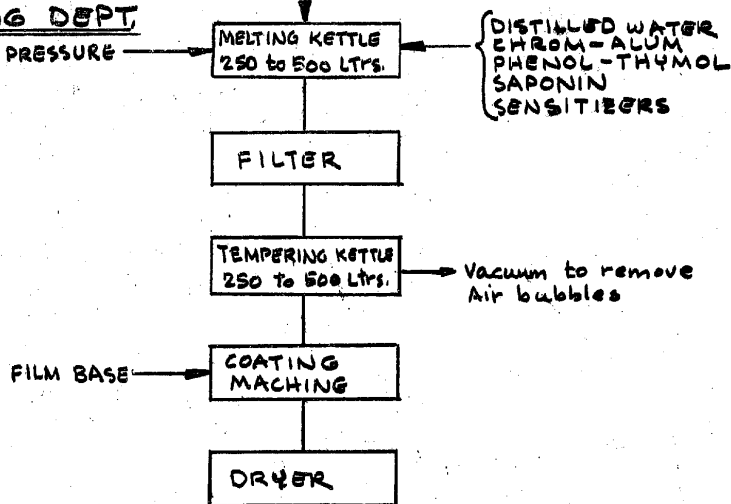
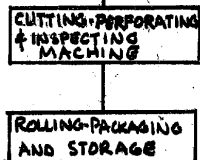
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SECRET- SECURITY INFORMATION

Enclosure D

EMULSION DEPT.FILM COATING DEPT.

AIR PRESSURE

FINISHING DEPT.FLOW SHEET for EMULSION PRODUCTION

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